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# Notes on Chinese *Saxifraga*: *S. obovatipetala* T.C.Ku and *S. lhasana* H.Sm. (sect. Ciliatae subsect. Rosulares)

Shinobu AKIYAMA[a] and Hideaki OHBA[b]

[a]Department of Botany, National Science Museum, Amakubo 4-1-1, Tsukuba, 305-0005 JAPAN;
[b]Department of Botany, University Museum, University of Tokyo, Hongo 7-3-1, Tokyo, 113-0033 JAPAN

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*Saxifraga obovatipetala* T.C.Ku from Sichuan, China, is conspecific with *S. lhasana* H.Sm. described from Tibet. Detailed description of the latter is given. This species is similar to *S. muricola* C.Marquand & Airy Shaw from Tibet and *S. umbellulata* Hook.f. & Thomson from the Himalaya and Tibet in having conspicuous rosettes and umbel-like inflorescences.

## Introduction

*Saxifraga obovatipetala* was described by Ku (1989) based on a collection of the Sichuan Botanical Exploration Team in 1973 at Shangrewo (alt. 3300 m) in Xiangcheng District. Ku considered this species to be related to *S. sanguinea* Franch. and *S. gyalana* C.Marquand & Airy Shaw and distinguished it from them by its oblong-ovate white petals with a yellow base, oblong basal leaves with cartilaginous ciliate margins apically, and oblong-lanceolate sepals slightly spreading after flowering.

The first author (S. Akiyama) collected a *Saxifraga* around Wuming Shan (alt. 4000 m), near the border between Xiangcheng Xian and Daocheng Xian in Sichuan, in the same county as the type locality of *S. obovatipetala.* This note aims to discuss further noteworthy features for consideration in determining its systematic status.

## Observations

*Saxifraga obovatipetala* is a small monocarpic herb with a conspicuous rosette consisting of 30–70 leaves (Fig. 1). The rosette sometimes bears subsidiary rosettes in the axils of rosulate leaves of the main rosette. The rosulate leaves are sessile, 6–8 mm long, 1.2–2 mm wide, compressed but widely triangular in cross section basally, i.e., the basal part is thickened and obscurely ridged on the abaxial side (Fig. 2e, f). About ten cartilaginous cilia appear interruptedly on the apical margin. The number and arrangement of the cilia differ from those in Ku's illustration and description, however, they seem to be variable in number. The flowering stems are 2.5–6 cm tall, with blackish or translucent glandular hairs or papillae throughout, and have 3–5 cauline leaves in the middle. The cauline leaves are similar to the rosulate leaves in shape, but become gradually smaller and narrower, 2–5 × 0.5–1.5 mm, and have no marginal cartilaginous cilia but do have glandular hairs and papillae. The inflorescence is considered to be a usually 3–5-flowered cyme. The flowering stem is terminated by a single flower with two, nearly opposite bracts (rarely with three nearly whorled bracts). These bracts are similar to the cauline leaves in shape and size and subtend a secondary axis terminated by a single flower

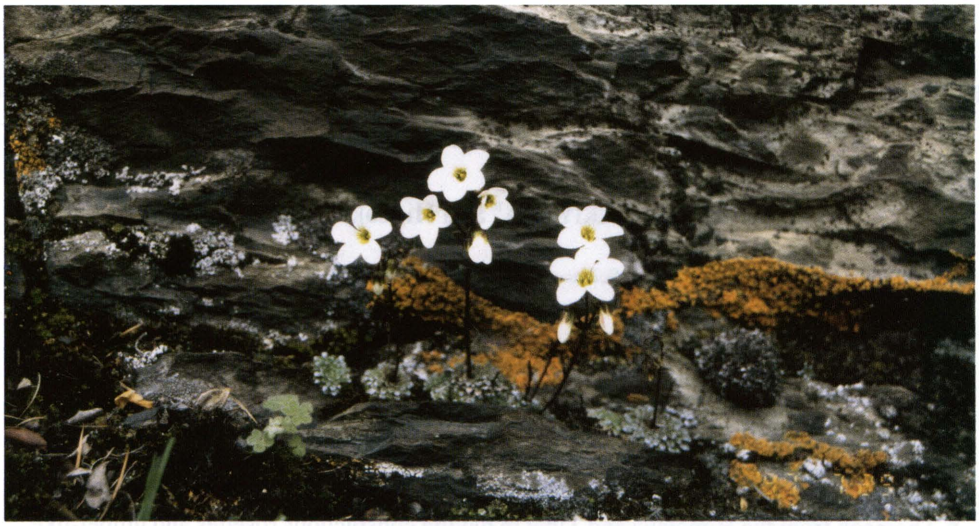

Fig. 1. *Saxifraga lhasana* H.Sm. China, Sichuan, Xiangcheng, around Wuming Shan, alt. 4000 m, 29 July 1997.

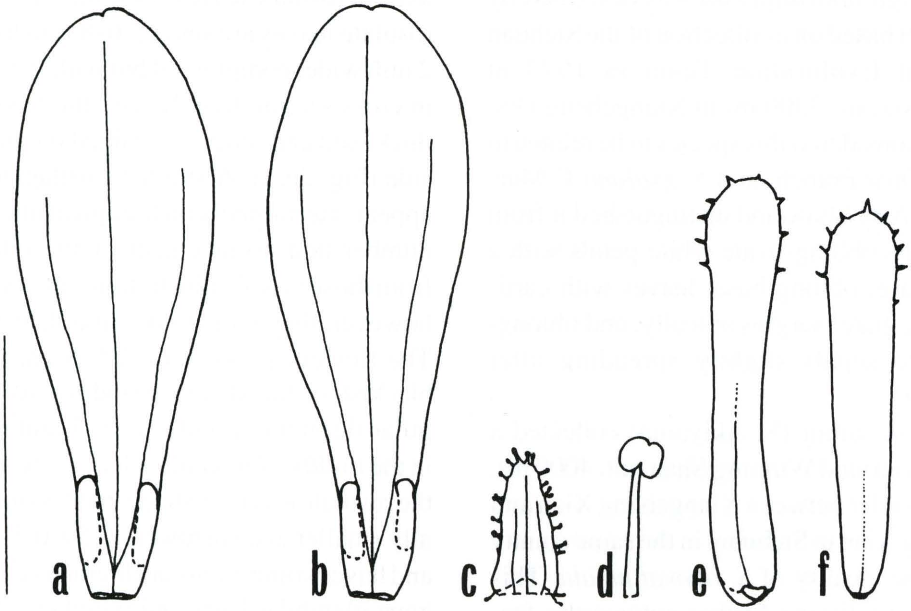

Fig. 2. *Saxifraga lhasana* H.Sm. China, Sichuan, Xiangcheng, around Wuming Shan, alt. 4000 m (Wu et al. 819, 29 July 1997, TI). a, b: Petals. c: Sepal. d: Stamen. e, f: Radical leaves. Bar = 5 mm.

which has two usually alternate bracts. One of the bracts is at the base of the secondary axis, and the other is at middle of the secondary axis and subtends a tertiary axis terminated by a single flower with two bracts. When the tertiary axis elongates, one of the bracts is situated at the base and the other at the middle, similar to the way of the secondary axis and its terminal flower develop. The fourth axis elongates in the axil of the bract in the middle of the tertiary axis. If the tertiary axis does not elongate, the two bracts are situated at the base and the terminal flower does not develop.

The flower buds are in a nodding position before opening, then become ascending or sometimes horizontal at flowering. The flowers are hermaphroditic and protandrous. The sepals are connate basally and form a very short hypanthium. The free part is always erect to suberect at flowering, triangular to triangular-ovate with an obtuse apex and with sparse translucent glandular hairs and papillae on the margins and abaxial surface (Fig. 2c).

The petals are erect and slightly spreading in the upper half at flowering, 8–12 mm long, 3–4 mm wide, oblong-oblanceolate or very narrowly obovate with rounded and often with a slightly notched apex, and with a pair of oblong raised parts near the margins at the base and a single vein with two lateral veins (Fig. 2a, b). Ku did not mention nor illustrate the raised parts. He described the petals as "3-nervis". The Stamens are erect and diplostemonous. One of them comes close to the stigma and the anther remains there until the stigma becomes receptive. The filaments are filiform and almost as long as the sepals at flowering and a little longer after flowering. The anthers are basifixed, widely oblong with four thecae, and red-purple before dehiscence (Fig. 2d). The disc surrounding the basal part of the ovaries is not conspicuous. At maturity of the female stage the stigmas become capitate with dense papillae and the ovaries are erect. Each locule contains ca. 100 ovules. We did not observe seeds because only flowers were collected.

## Relationship

We find minor differences between the original description of *S. obovatipetala* by Ku (1989) and our specimens (Table 1). The differences seem to be with the range of variation and probably arose from his observation of insufficient materials, particularly regarding the venation of the petals. Although we have not examined the type, we determined our specimens to be *S. obovatipetala.* We shall discuss the affinity of this species based on observations of our specimens.

Ku (1989) compared *S. obovatipetala* with *S. sanguinea* Franch. and *S. gyalana* C.Marquand and Airy Shaw, but not with *S. umbellulata* Hook.f. & Thomson, *S. muricola* C.Marquand and Airy Shaw and *S. lhasana* H.Sm. It is obvious that this species belongs to subsect. Rosulares sect. Ciliatae because it has conspicuous rosettes. From *S. sanguinea* and *S. gyalana*, *S. obovatipetala* is easily distinguished by its white petals without a claw. The gradually narrowed, not clawed, lower half of the petals is unique in subsect. Rosulares, because species of this subsection usually have petals with triangular-ovate or lanceolate laminae and short claws. *Saxifraga umbellulata* Hook.f. & Thomson from Tibet and the Himalaya and *S. muricola* C.Marquand and Airy Shaw, which is sometimes treated as a variety of *S. umbellata* (Pan 1985, 1992) from Tibet, are similar to *S. obovatipetala* in having conspicuous rosettes and umbel-like inflorescences, but differ in having clawed petals. Pan (1992) treated *S. obovatipetala* as a synonym of *S. umbellulata* var. *pectinata* but if we consider *S. umbellulata*, *S. muricola* and *S. obovatipetala* to be conspecific, *S. obovatipetala* must be treated as a synonym of *S. umbellulata* var. *muricola* because it has

Table 1. Comparison of *Saxifraga* collected around Wuming Shan and *S. obovatipetala*

| Character | *Saxifraga* collected around Wuming Shan | *S. obovatipetala* |
|---|---|---|
| Color of petal (abaxial side) | white with yellow base | white with yellow base |
| Shape of petal base | attenuate | attenuate |
| Appendages of petal | a pair of oblong raised parts near margins at base of petal | not mentioned |
| Venation of petal | a single vein with two lateral veins | 3 veins |
| Rosulate leaves | with cartilaginous ciliate margins in apical part | with cartilaginous ciliate margins in apical part |
| Number of cilia | ca. 10 | 17 |
| Arrangement of cilia | remote | close |

white petals. *Saxifraga lhasana* H.Sm. from S. Tibet (Smith 1960) is treated as a synonym of *S. umbellulata* var. *muricola* by Pan (1992), but it is clearly distinguished from the latter in having white petals with an attenuate base. We are unable to distinguish *Saxifraga obovatipetala* from *S. lhasana*, so we conclude that these two species are conspecific.

Flowers with white petals resemble those of species in sect. Mesogynae. However, no species of sect. Mesogynae has conspicuous rosettes.

## Taxonomic treatment

**Saxifraga lhasana** H.Sm. in Bull. Brit. Mus. (Nat. Hist.), Bot. **2**(9): 255 (1960).

*Saxifraga lhasana* H.Sm. var. *decapitulata* H.Sm. in Bull. Brit. Mus. (Nat. Hist.), Bot. **2**(9): 257 (1960).

*Saxifraga obovatipetala* T.C.Ku in Bull. Bot. Res., Harbin **9**(4): 16 (1989), **syn. nov.**

*Saxifraga umbellulata* Hook. f. & Thomson var. *pectinata* (C.Marquand & Airy Shaw) J.T.Pan: J.T.Pan in Fl. Reipubl. Pop. Sin. **34**(2): 165 (1992), p.p., excl. typo.

Specimen examined: CHINA, Sichuan, Xiangcheng, around Wuming Shan, alt. 4000 m (Wu et al. 819, 29 July 1997, KUN, TI).

Distr.: S. Tibet and Sichuan.

**Saxifraga muricola** C.Marquand & Airy Shaw in J. Linn. Soc. Bot. **48**: 180 (1929).

*Saxifraga muricola* C.Marquand & Airy Shaw var. *brachypetala* C.Marquand & Airy Shaw in J. Linn. Soc. Bot. **48**: 180 (1929).

*Saxifraga muricola* C.Marquand & Airy Shaw var. *quinquenervis* C.Marquand & Airy Shaw in J. Linn. Soc. Bot. **48**: 180 (1929).

*Saxifraga umbellulata* Hook.f. & Thomson var. *muricola* (C.Marquand & Airy Shaw) J.T.Pan in C.Y.Wu (ed.), Fl. Xizang. **2**: 494 (1985); in Fl. Reipubl. Pop. Sin. **34**(2): 166 (1992).

Distr.: Tibet.

**Saxifraga umbellulata** Hook. f. &

Thomson in J. Linn. Soc. Bot. **2**: 71 (1857). J.T.Pan in Fl. Reipubl. Pop. Sin. **34**(2): 165 (1992).

Distr.: Himalaya and S. Tibet.

var. **pectinata** (C.Marquand & Airy Shaw) J.T.Pan in Fl. Reipubl. Pop. Sin. **34**(2): 165 (1992).

Distr.: E. Tibet.

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Smith H. 1960. *Saxifraga* of the Himalaya. II. Some new species. Bull. Brit. Mus. Nat. (Hist. Bot.), **2**(9): 229–260, pl. 13–21.

秋山　忍[a]，大場秀章[b]: **中国産ユキノシタ属 *Saxifraga obovatipetala* T.C.Ku と *S. lhasana* H. Sm. の分類学的異同**

1997年7月に中国四川省郷城県無名山附近で，同じ郷城県上熱窩を基準産地とする *Saxifraga obovatipetala* T.C.Ku と思われるユキノシタ属植物を採集することができた．帰国後詳細に観察した結果，この植物は *S. obovatipetala* に当たると考えられた．類似種と比較した結果，*S. obovatipetala*は，チベットから記載された*S. lhasana* H. Sm.と同種であり，後者の異名となることが判った．この種は，同じくチベットに産する*S. muricola* C. Marquand & Airy Shaw 及びヒマラヤとチベットに産する *S. umbellulata* Hook.f. & Thomsonに近縁である．その結果，*S. lhasana*の分布は，チベットから四川省西南部に及ぶことが明らかになった．

([a]国立科学博物館植物研究部，
[b]東京大学総合研究博物館)